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GENERIC DELIMITATION IN SCIRPEAE

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In my revision of the Cyperaceae in the 3rd edition of "Hegi" (Illustrierte Flora von Mitteleuropa), which was published in 1967, I enumerated the following genera in the tribe Scirpeae: *Lipocarpha, Ascolepis, Hemicarpha, Nelmesia, Ascopholis, Fuirena, Scirpus, Eriophorum, Eleocharis, Fimbristylis, Bulbostylis, Ficinia.* Here now I want to give reasons for this way of delimitation and for the sequence of the genera.

Let us begin with the type genus *Scirpus.* This genus is delimitated quite differently. On one hand we have Linné's wide conception, and on the other hand we have the tendency of splitting, that means the separation of the sections *Bolboschoenus, Schoenoplectus, Holoschoenus, Isolepis, Eleogiton,* and *Baeothryon (Trichophorum).* While Linné classified the genus *Eleocharis* among *Scirpus,* Koyama went still one step farther and classified *Eriophorum* with *Scirpus* too.

In my Hegi revision I treated the genus *Scirpus* in a wide sense, but I treated *Eriophorum* and *Eleocharis* as separate genera. For this intermediate position I want to give reasons.

First of all I want to answer the question whether or not it would be reasonable to break up the large genus *Scirpus* into several smaller genera. For example there are many differences between *Scirpus sylvaticus* and *Scirpus setaceus* in their vegetative parts. And mainly these differences are the motivation for the splitting into several smaller genera, as performed by many authors (Oberdorfer, Rothmaler, Clapham/Tutin/Warburg).

If we leave the genus *Scirpus* for a moment and have a look on the genus *Carex,* we find a similar situation. In this genus too, there are many differences in the vegetative parts. While comparing for example *Carex riparia* and *Carex pauciflora,* even a layman would have no difficulties to distinguish them. For practical reasons a splitting of the huge genus *Carex* would be more urgent than that of the genus *Scirpus.* I think because of the scientific equality it will be better to maintain the genus Scirpus in its size, and to avoid the splitting into numerous small genera. In my Hegi revision I formulated this opinion as follows: "We do not fail to recognize that in some extent the species of the genus *Scirpus* as treated here, are quite different, particularly with regard to their vegetative organs. But we think that systematically a classification into sections corresponds to this variety. To ever-

yone to whom this does not seem satisfactory it will be recommended to treat these groups as subgenera".

As I mentioned above, on the other hand there is a tendency to include *Eleocharis* and *Eriophorum* into the genus *Scirpus*. That seems too extensive, because *Eleocharis* and *Eriophorum* show some features in the floral parts which make a separation seem legitimate. *Eleocharis* has a thickened base of the style, *Eriophorum* has hypogynous hairs both of which can be evaluated as diagnostic characters. We must admit, that in both cases there are species which have an intermediate position. In the genus *Eleocharis* there are *E. quinqueflora* and *E. parvula* which do not show the thickened style base. Between *Scirpus* and *Eriophorum* on the other hand there is *Scirpus maximowiczii* (= *Eriophorum japonicum*) which has hair-like hypogynous bristles and therefore forms a link. In this place I want to mention that in my opinion it is not yet clarified whether or not the hypogynous bristles of *Scirpus* and the hypogynous hairs of *Eriophorum* are homologous structures. Investigations concerning the development of these organs would perhaps lead to clearness.

Before I come to the end I want to say some words about the sequence of genera as given at the beginning. This disposition is in accordance with MATTFELD's "Synanthientheorie". According to this theory the hermaphrodite flowers of the subfamily Cyperoideae actually are "Synanthien", that means hermaphroditic flower-like partial inflorescences of unisexual flowers. Following this opinion the hypogynous bristles of *Scirpus* are not perianth-bristles, but correspond to the bracts of the single flowers or parts of bracts respectively. We are able to form a morphological series from *Lipocarpha* through *Fuirena* and *Scirpus* to *Fimbristylis*. *Lipocarpha* shows hypogynous scales. In *Fuirena* these scales are reduced. In *Scirpus* only the ribs of the primary scales remain, and in *Fimbristylis* finally the scales have disappeared completely. We consider the genera with well-developed hypogynous scales as primitive, while we take those lacking scales for highly developed.